

Docket No.: 58060/M521
Amdt date September 1, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-27 (Cancelled)

28. (NEW) A method for monitoring the adjustment movement of a component, in particular a window pane or a sunroof in motor vehicles, which is driven by a drive device and can be adjusted in a translatory or rotary fashion, wherein a plurality of input signals which can be derived from the drive device and which represent a deceleration of the adjustment movement of the drive device are input at input neurons of an input layer of a neural network with at least one hidden layer having hidden neurons, said network outputting, at at least one output neuron of an output layer, an output value which corresponds to the adjusting force or to a trapped state or nontrapped state.

29. (NEW) The method as claimed in claim 28, wherein the input signals which can be derived from the drive device indirectly represent deceleration of the adjustment movement of the drive device.

30. (NEW) The method as claimed in claim 28 or 29, wherein deceleration of the adjustment movement of the drive device is determined by changing the period length and/or the motor current and/or the motor voltage of a drive motor of the drive device.

31. (NEW) The method as claimed in claim 28, wherein the input signals which can be derived from the drive device are output in parallel or in series to the input neurons of the input layer of the neural network.

32. (NEW) The method as claimed in claim 28, wherein the inputs of the input layer, of the hidden layer and of the output layer as well as the connections of the input layer to the at

least one hidden layer , the connections of the plurality of hidden layers to one another and the connections of a hidden layer to the output layer have differing weightings.

33. (NEW) The method as claimed in claim 28, characterized in that the hidden neurons of the at least one hidden layer and the at least one output neuron of the output layer have a constant threshold value or bias which shifts the output of the transfer functions of the neurons into a constant region.

34. (NEW) The method as claimed in claim 28, wherein at the input neurons, hidden neurons and/or output neurons of the neural network, in a learning phase,

- random weightings are assigned,
- various input patterns which are applied to the input neurons are predefined, and the associated at least one output value is calculated, and
- the weightings and/or the threshold value are changed as a function of the difference between the at least one output value and at least one setpoint output value.

35. (NEW) The method as claimed in claim 34, wherein the degree of change in the weightings depends on the size of the difference between the at least one output value and the at least one setpoint output value.

36. (NEW) The method as claimed in claim 34 or 35, wherein the output value is measured with a clip-on force measuring instrument at different spring constants or in particular at 2 N/mm and 20 N/mm, and in that the clip-on force measuring instrument outputs the measured output value in a way which is analogous to the input values.

37. (NEW) The method as claimed in claim 28, wherein the motor period, the motor current and/or the motor voltage of the drive motor are input into the input neurons as input signals.

38. (NEW) The method as claimed in claim 28, wherein an adaptation period which specifies the period calculated at a predefined reference voltage and which is associated with the

position of a reference distance stored in the learning phase is input into the input neurons as an additional input signal.

39. (NEW) The method as claimed in claim 38, wherein the adaptation period is averaged in that the neural network calculates a new adaptation period at each full rotation of the drive motor or in four quarter periods of the drive motor, said new adaptation period being made available at the next adjustment movement as an adaptation period.

40. (NEW) The method as claimed in claim 28, wherein the input values of the input neurons are composed of

- the values of an adaptation profile of the component which can be adjusted in a translatory fashion,
- the values of an adaptation period when the component which can be adjusted in a translatory fashion is adjusted,
- a run up flag,
- the output values of a shift register for terminal voltages of the drive motor,
- the output values of a shift register for period values,
- the temperature of the drive motor,
- the ambient temperature,
- a speed signal
- an oscillation voltage, and
- a preceding output value,

and the force which is determined by neural means is output as an output value of an output neuron.

41. (NEW) The method as claimed in claim 28, wherein in the learning phase of the neural network, input patterns which are applied to the input neurons and the force values which are output by the at least one output neuron are selected and/or predefined as a function of the desired sensitivity of the system at low spring constants.

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42. (NEW) The method as claimed in claim 41, wherein the learning component in the learning phase of the neural network is composed of the adaptation period which is determined anew in the application after each pass.
43. (NEW) The method as claimed in claim 41 or 42, wherein the learning phase takes place in a vehicle before the operational application.
44. (NEW) The method as claimed in claim 43, wherein the weightings of the neural network which are determined in the learning phase are defined during the operational application.
45. (NEW) The method as claimed in claim 28, further comprising an adaptation device for determining signals of the drive device which are standardized to a reference value, and for outputting adaptation values to the input layer of the neural network.
46. (NEW) The method as claimed in claim 45, wherein the adaptation device outputs the adaptation values to the input neurons of the neural network as an additional input signal as a function of the position.
47. (NEW) The method as claimed in claim 45 or 46, wherein the adaptation device is composed of a neural adaptation network to whose input neurons at least one signal of the drive device is applied and whose at least one output neuron outputs the position-dependent adaptation values to the neural network.
48. (NEW) The method as claimed in claim 47, wherein additional parameters such as the ambient temperature, climatic data or the temperature and the cooling behavior of the drive motor of the drive device are applied to the input neurons of the neural adaptation network.
49. (NEW) The method as claimed in claim 38 or 39, characterized in that the adaptation device has a model of the drive device, a fuzzy system or a mathematical model with a genetically generated algorithm.

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50. (NEW) The method as claimed claim 28, wherein the drive motor is stopped or reversed as a function of the output value of the neural network and the spring constant.

51. (NEW) The method as claimed in claim 50, wherein the logic combination of the spring constant of the drive device with the output value of the neural network is carried out by means of a logic circuit, a mathematical model with an algorithm or a neural logic network.

52. (NEW) The method as claimed in claim 50 or 51, wherein the rotation speed of the drive motor is sensed, and the difference in rotational speed between two periods is formed and logically combined with the output value of the neural network in such a way that

- when a first switch-off threshold value of the output value of the neural network and a difference in rotational speed which is smaller than a predefined threshold value for the difference in rotational speed is exceeded, the drive motor is stopped or reversed up to the end of the adjustment movement only if the output value of the neural network exceeds a second switch-off threshold value which is greater than the first switch-off threshold value ,
- when a first switch-off threshold value of the output value of the neural network and a difference in rotational speed which is greater than a predefined threshold value for the difference in rotational speed are exceeded, the drive motor is stopped or reversed,
- when the second switch-off threshold value is exceeded the drive motor is stopped or reversed irrespective of the difference in rotational speed.

53. (NEW) The method as claimed in claim 52, wherein the first switch-off threshold value of the output value of the neural network and a difference in rotational speed which is smaller than the predefined threshold value for the difference in rotational speed are exceeded, stopping or reversing of the drive motor are blocked even if the difference in rotational speed ensuring the further adjustment movement of the drive device is greater than the predefined threshold value for the difference in rotational speed.

54. (NEW) The method as claimed in claim 28 having the following steps:

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evaluation of the input signals by means of the neural network in order to determine a state of the motor vehicle and/or a state of the adjustment device;
selection of a set of weightings for the neural network from a multiplicity of sets of weightings irrespective of the evaluation of the input signals and the determined state, and
use of the selected set of weightings to operate the neural network while the drive device of the adjustable component is being controlled.